ABSTRACT

Face detection techniques are provided that use a multiple-stage face detection algorithm. An exemplary three-stage algorithm includes a first stage that applies linear-filtering to enhance detection performance by removing many non-face-like portions within an image, a second stage that uses a boosting chain that is adopted to combine boosting classifiers within a hierarchy "chain" structure, and a third stage that performs post-filtering using image pre-processing, SVM-filtering and color-filtering to refine the final face detection prediction. In certain further implementations, the face detection techniques include a two-level hierarchy in-plane pose estimator to provide a rapid multi-view face detector that further improves the accuracy and robustness of face detection.